

- [54] **COLLAPSIBLE CONTAINER AND
ASSEMBLY METHOD THEREFOR**
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229/49
[51] **Int. Cl.**..... **B65d 13/00**
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217/12, 13, 43 A; 220/4 F; 108/55, 56; 93/35
R

[57] ABSTRACT

A collapsible container comprises a horizontally disposed pallet assembly having upstanding sidewalls releasably attached thereto by a plurality of perimetrically oriented barbs to define an open top storage compartment. Upon assembly, a flat bottom sheet is closely fitted within the sidewalls to urge them outwardly into locking engagement with the barbs. Reinforcement rails are also attached to top edges of the sidewalls by barbs.

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13 Claims, 5 Drawing Figures

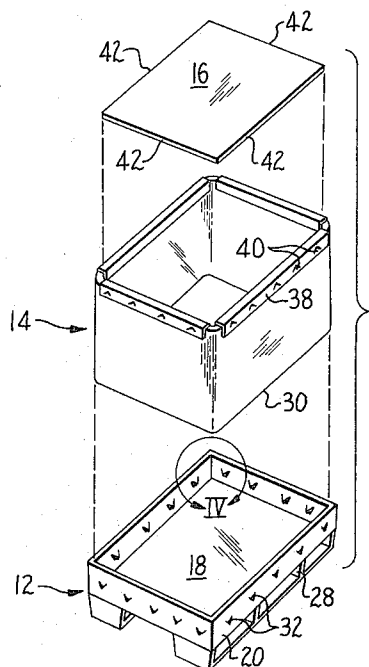


FIG. 1.

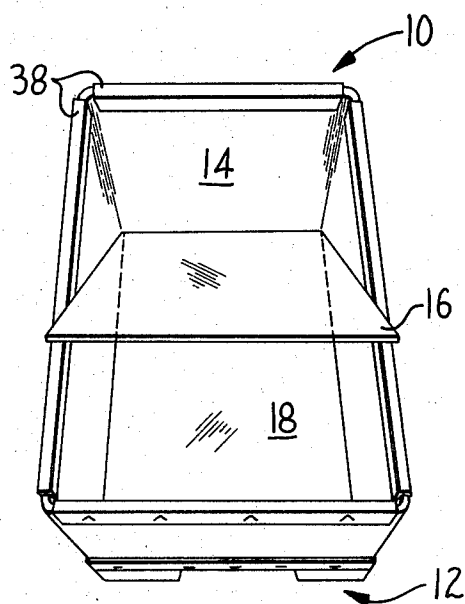
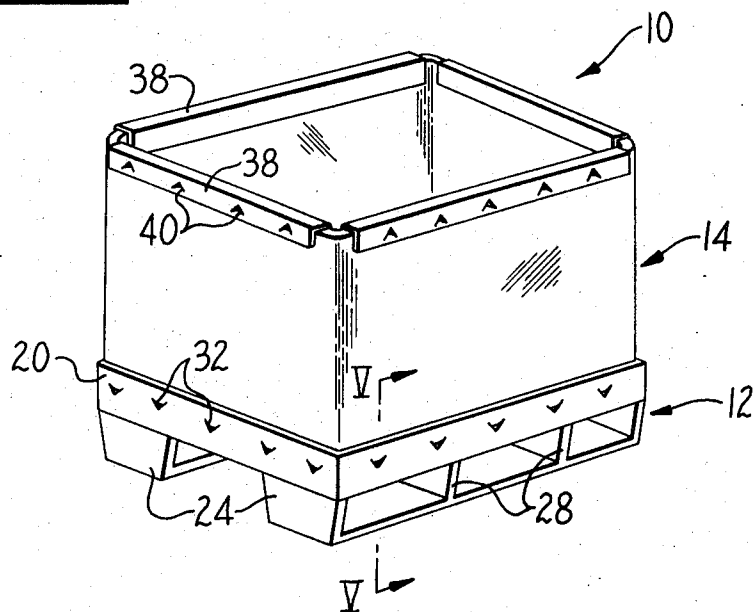


FIG. 2.

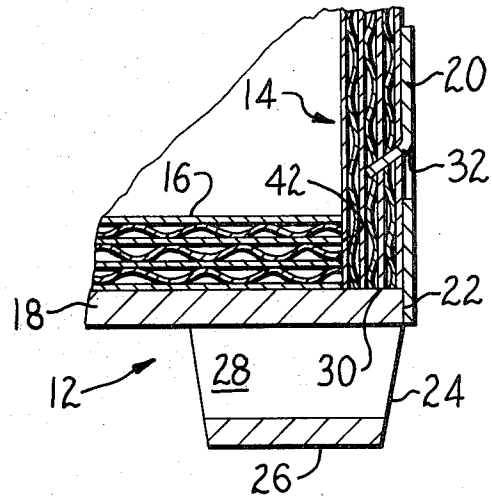
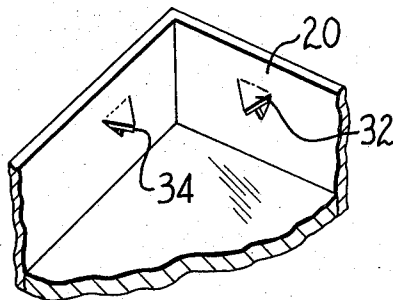
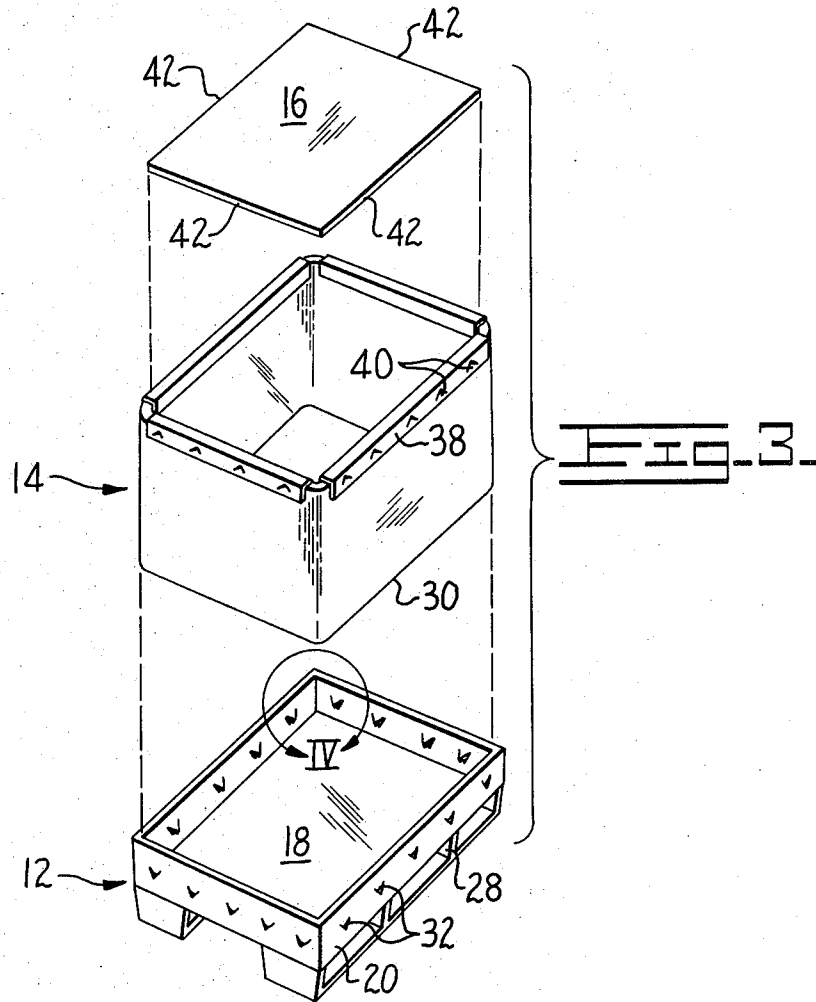


Fig. 4.

Fig. 5.

COLLAPSIBLE CONTAINER AND ASSEMBLY METHOD THEREFOR

BACKGROUND OF THE INVENTION

A recurring problem in the storage, manufacturing and shipping industries is one of maximizing the usage of available storage space. The bulk storage and transporting of small parts is normally accomplished by placing the parts in a container of acceptable size and shape, and thence transporting the containers by the use of a fork lift truck or an overhead crane. Such containers are usually constructed of metal or wood and are therefore quite bulky, heavy and cannot be disassembled for storage purposes.

SUMMARY OF THE INVENTION

Accordingly, an object of this invention is to provide an improved and economical container for storing and transporting bulk or packaged parts.

Another object of this invention is to provide a container having detachable and collapsible sidewalls that can be expeditiously removed from a pallet assembly and stored flat when the container is not in use, thereby conserving valuable storage space.

A further object of this invention is to provide a non-complex and economical container exhibiting a lightweight construction and a high degree of structural integrity.

A still further object of this invention is to provide a method for expeditiously erecting such container.

Other objects and advantages of the present invention will become apparent upon reference to the accompanying drawings and the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an angular perspective view of a collapsible container embodying the present invention;

FIG. 2 is a top perspective view showing a flat bottom sheet being inserted into the erected container;

FIG. 3 is an exploded, isometric view of the container;

FIG. 4 is an enlarged view, taken at circle IV in FIG. 3, illustrating a pallet flange and retention barbs employed in the container; and

FIG. 5 is an enlarged sectional view, taken in the direction of arrows V—V in FIG. 1, illustrating the FIG. 4 retention barbs in their locking engagement with a sidewall of the container.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1 and 3, a collapsible container 10 includes a horizontally disposed base or pallet assembly 12 of any suitable substantially rigid material such as steel or wood, an upstanding sleeve 14 formed by four contiguous sidewalls and a separable, flat bottom sheet 16. The pallet assembly is rectangular and includes a flat base plate 18 having an upstanding restraining means or flange 20 perimetrically oriented about the base plate and suitably secured to edges 22 thereof (FIG. 5).

Two pallet supporting foot members 24, having bottom skid surfaces 26, are also secured to the base plate. The foot members are each reinforced by ribs 28 appropriately spaced to provide convenient openings for accepting standard carriage forks generally associated

with material handling fork lift trucks. The foot members may be tapered downwardly (FIG. 5) to facilitate vertical stacking of the pallets when the containers have been disassembled for storage.

Sleeve or wall structure 14 may be constructed of a standard corrugated paperboard material that is fire retardant and water repellent, such as that manufactured by the Laminite Division of Tri-Wall Containers, Inc., of Long Island, New York. The contiguous sidewalls, forming a collapsible sleeve, are hingedly connected together at their upstanding edges by standard scorelines. As best seen in FIGS. 3 and 5, the expanded sleeve is suitably sized and configured to abut and snugly fit within the confines of continuous flange 20 and to have bottom edges 30 thereof abut bottom plate 18.

The sidewalls are urged outwardly against pallet flange 20 by a corrugated paperboard bottom sheet 16 which forms retention means to prevent lateral movement of the sidewalls relative to the pallet. Referring to FIGS. 3-5, the pallet flange has a multiplicity of locking means, such as pointed barbs 32, formed therearound which pierce lower portions of the sidewalls to lock the sleeve in position relative to the pallet assembly. When bottom sheet 16 is inserted into the container (FIG. 2), the sidewalls are forced outwardly into locking engagement with the barbs.

The barbs may be formed by the use of triangularly shaped punch (not shown) which is suitably struck to point an apex 34 of each barb generally downwardly, relative to pallet 12. Thus, upward movement of the sidewalls relative to the pallet assembly is resisted by the barbs. As shown in FIG. 3, the barbs on each side of the flange are preferably laterally spaced in offset and staggered relationship relative to the barbs formed on a directly opposite side of the flange to permit the barbs to penetrate an unpunctured surface of a respective sidewall upon reinstallation and rotation of the sleeve 180° from its original position.

The top edges of the sidewalls may be reinforced by overlying U-shaped rails 38. The rails thus provide reinforcement means to strengthen and protect such edges against wear, abrasion and water absorption, and to provide added strength for vertically stacking the container one upon another. The rails also have a multiplicity of barbs 40 formed thereon which are constructed like barbs 32 to pierce the underlying sidewalls for retention purposes. Each rail preferably has a length (FIG. 1) which is slightly less than the length of a respective, underlying sidewall to provide maximum top edge protection thereto without restricting the foldability of the sidewalls for storage purposes.

METHOD OF CONTAINER ASSEMBLY

After base 12 is disposed horizontally, sleeve 14, normally stored in a collapsed substantially flat condition, is opened by expanding it into the rectangular form illustrated in FIG. 1. The sleeve is positioned on the base to have lower portions of its sidewalls positioned adjacent to the barbs. The sleeve is fully inserted into the confines of rectangular flange 20 to have its bottom edges 30 abut base plate 18. As shown in FIG. 2, bottom retention sheet 16 is then inserted into the compartment defined by the sleeve and pressured downwardly to abut the base plate.

Pressing of the retention sheet between the sidewalls functions to apply a pressure to the sidewalls to urge

them outwardly into locked, piercing engagement with barbs 32. It should be understood that other types of pierceable material which will function to receive the barbs to retain the sidewalls in locked position could be utilized in lieu of corrugated paperboard. Edges 42 of the retention sheet retain the rectangular form of the sleeve and prevent horizontal movement of the sidewalls whereas the generally downwardly pointing barbs prevent vertical, upward movement thereof. Rails 40 can be attached to the top edges of the sidewalls before or after the above sequence has been accomplished. It has been shown by actual testing that a standard size container made in accordance with this invention will exhibit a loading capacity exceeding 4,000 lbs.

Removal and subsequent storage of sidewalls 14 from pallet assembly 12 is accomplished by reversing the above assembly procedure. In particular, retention sheet 16 is removed and the sidewalls are released from barbs 32 by pushing the sidewalls inwardly toward each other. Upon removal of the sleeve, it is flat folded and stored, along with flat retention sheets 16, for future use to conserve valuable storage space.

What is claimed is:

1. A container comprising
a horizontally disposed base,
an upstanding sleeve, formed by contiguous sidewalls, positioned on said base to define an open top compartment therewith,
locking means formed around said base releasably connecting lower portions of said sleeve to said base and
retention means positioned within said compartment for urging said sidewalls outwardly into expanded, locked engagement with said locking means and to prevent lateral movement of said sidewalls relative to said base.
2. The container of claim 1 wherein said sleeve comprises a corrugated paperboard material and wherein said sidewalls are hingedly connected together at their upstanding edges to form a collapsible sleeve foldable between a substantially flat, stored condition and an expanded condition forming said compartment.
3. The container of claim 1 wherein said base comprises restraining means formed therearound for preventing said sidewalls from moving outwardly relative to said base.
4. The container of claim 3 wherein said restraining means comprises a flange extending upwardly from marginal edges of said base, said sidewalls are positioned in telescopic and abutting relationship within said flange and wherein said locking means are formed on said flange.
5. The container of claim 4 wherein said locking means comprises a plurality of pointed barbs formed on said flange to point generally downwardly into penetrating relationship with said sidewalls.
6. The invention of claim 5 wherein said flange is rectangular and wherein the barbs formed on one side of said flange are laterally spaced in offset relationship with respect to the barbs formed on an opposite side of

said flange.

7. The container of claim 1 wherein said retention means comprises a separable, flat bottom sheet configured to substantially conform with a horizontal cross section of said compartment.

8. A collapsible container comprising,
a pallet having a generally horizontally oriented top surface,
an upwardly projecting perimetrically oriented flange attached to said pallet,
a replaceable wall structure constructed of a fibre-board material having four vertically oriented sidewalls foldably enjoined and fitted within said flange to cooperate with said pallet to form a material receiving compartment therewith, and
a separable, substantially flat sheet closely fitted within the four sidewalls of the wall structure and positioned at the bottom thereof to hold the walls in container forming relation against the flange of said pallet.

9. The collapsible container of claim 8 including a multiplicity of barbs projecting inwardly from said flange in piercing relationship with at least one of said sidewalls to prevent inadvertent removal of the wall structure from said pallet.

10. The collapsible container of claim 9 wherein said wall structure has reinforcement means encompassing the top edge of said wall structure to strengthen and protect said top edge against wear and abrasion normally associated with container usage.

11. The collapsible container of claim 10 wherein said reinforcement means comprises a rail having a multiplicity of barbed projections positioned in piercing relationship with underlying surface portions of said sidewalls.

12. The collapsible container of claim 11 wherein said sidewalls are hingedly connected together to permit said wall structure to be folded into a substantially flat, collapsed condition for storage purposes.

13. A container comprising
a horizontally disposed base,
an upstanding sleeve, formed by contiguous sidewalls, positioned on said base to define an open top compartment therewith, and
locking means formed around said base releasably connecting lower portions of said sleeve to said base,
restraining means on said base comprising a rectangular flange extending upwardly from marginal edges of said base, said sidewalls positioned in telescopic and abutting relationship within said flange,
said locking means comprising a plurality of pointed barbs formed on said flange to point generally downwardly into penetrating relationship with said sidewalls, the barbs formed on one side of said flange being laterally spaced in offset relationship with respect to the barbs formed on an opposite side of said flange.

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